

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

**APPLICANT:** Helmut Thoma **GROUP:** 3682  
**SERIAL NO:** 10/647,912 **EXAMINER:** Terence Boes  
**FILED:** August 25, 2003  
**FOR:** GEAR ARRANGEMENT

Commissioner of Patents  
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Alexandria, VA 22313-1450

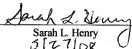
Sir:

**APPEAL BRIEF**

This appeal is in response to the Official Action dated September 25, 2007, which has been made final, and the Notice of Appeal filed March 24, 2008. Please charge our deposit account in the amount of \$510.00 for the Notice of Appeal fee.

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I hereby certify that this paper (along with any paper referred to as being attached or enclosed) is being filed electronically with the Commissioner for Patents via EFS-web on the date indicated below.

  
Sarah L. Henry  
3/27/08  
Date

## TABLE OF CONTENTS

I. Real Party in Interest.....	3
II. Related Appeals and Interferences.....	3
III. Status of Claims.....	3
IV. Status of Amendments.....	3
V. Summary of Claimed Subject Matter.....	4
VI. Grounds of Rejection to be Reviewed on Appeal.....	7
VII. Argument.....	8
VIII. Conclusion.....	14
 Claims Appendix .....	 15
Evidence Appendix.....	18
Related Proceedings Appendix.....	19

I. REAL PARTY IN INTEREST

The real party in interest is IMS Gear GmbH of Donaueschingen, Germany.

II. RELATED APPEALS AND INTERFERENCES

There are no related appeals or interferences.

III. STATUS OF CLAIMS

On March 24, 2008, the appellant appealed from the final rejection of claims 1, 11-14, 18 and 19 under 35 U.S.C. §102(b). Claims 2-10, 15-17 and 20 are withdrawn. Claims 1, 11-14, 18 and 19 are pending. Claims 1, 11-14, 18 and 19, which are set forth in the Claims Appendix attached hereto, are all the remaining claims in this application.

IV. STATUS OF AMENDMENTS

No amendments have been filed subsequent to the final rejection.

# V. SUMMARY OF CLAIMED SUBJECT MATTER

The invention relates to a gear arrangement operably arranged with a rotatable shaft.

Claim 1 recites a gear arrangement operably arranged with a rotatable shaft. The various elements recited in claim 1 are discussed in the specification in at least the following locations, amongst others:

FEATURES OF CLAIM 1	SPECIFICATION
A gear arrangement operably arranged with a rotatable shaft, comprising	Page 2, lines 6-8
a first gear made of a first material and a second gear made of a second material different than the first material,	Page 3, lines 2-3; Page 4, lines 15-16
wherein the first and second gears are disposed co-axially adjacent one another on the shaft,	Page 2, lines 68; Page 4, line 15
wherein the elasticity of the first gear is greater than that of the second gear,	Page 2, line 10-Page 3, line 10; Page 4, lines 20-21
wherein the strength of the second gear is greater than that of the first gear,	Page 3, lines 2-3
and wherein the first gear and the second gear are arranged on the shaft axially detached from each other such that the first and second gears rotate in the same direction relative to the shaft and independently of each other.	Page 2, lines 6-8; Page 5, lines 2-3

Claim 11 recites a transmission gear assembly operably arranged with a rotatable shaft that engages a cooperating gear. The various elements recited in claim 11 are discussed in the specification in at least the following locations, amongst others:

FEATURES OF CLAIM 11	SPECIFICATION
A transmission gear assembly operably arranged with a rotatable shaft, that engages a cooperating gear, the transmission gear assembly comprising:	Page 2, lines 6-8
a first gear having a plurality of first gear teeth located along the radial periphery of the first gear; and	Page 2, lines 10-13

a second gear having a plurality of second gear teeth located along the radial periphery of the second gear;	Page 3, lines 6-9
wherein the first and second gears are operably positioned co-axially on the shaft and axially detached from each other to allow independent rotation of the first and second gears in the same direction with respect to each other, wherein the first gear is constructed from a first material and the second gear is constructed from a second material different than the first material, and wherein the first gear has a greater elasticity than that of the second gear, wherein the first gear is engaged with the cooperating gear and the second gear is disengaged from the cooperating gear when an amount of load applied to the first gear does not exceed an amount that overloads the first gear.	Page 3, lines 4-10; Page 4, lines 19-21

Claim 18 recites a transmission gear assembly operably arranged with a rotatable shaft that engages a cooperating gear. The various elements recited in claim 18 are discussed in the specification in at least the following locations, amongst others:

FEATURES OF CLAIM 18	SPECIFICATION
A transmission gear assembly operably arranged with a rotatable shaft that engages a cooperating gear, the transmission gear assembly comprising:	Page 2, lines 6-8; Page 6, lines 2-3
a first gear having a plurality of first gear teeth located along the radial periphery of the first gear; and	Page 2, lines 10-13
a second gear having a plurality of second gear teeth located along the radial periphery of the second gear;	Page 3, lines 6-9
wherein the first and second gears are operably positioned co-axially on the shaft and axially detached from each other to allow independent rotation of the first and second gears in the same direction with respect to each other, wherein the first gear is constructed from a first material and the second gear is constructed from a second material different than the first material, wherein the first gear has a greater elasticity than that of the second gear, wherein the first gear engages the cooperating	Page 3, lines 4-10; Page 4, lines 19-21

gear and the second gear is not engaged with the cooperating gear when an amount of load applied to the first gear does not overload the first gear, and wherein both the first and second gears engage the cooperating gear when an amount of load applied to the first gear overloads the first gear.	
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VI. GROUND OF REJECTION TO BE REVIEWED ON APPEAL

Whether claims 1, 11-14, 18 and 19 are anticipated by Japanese Patent 59117951 to Shinichi (hereinafter "Shinichi").

VII. ARGUMENT

**REJECTION UNDER 35 U.S.C. §102(B)**

The Official Action contends “[c]learly two admitted gears are separate as they are given separate reference numbers and discussed separately.” (Official Action, pg. 4). In addition, the Official Action further contends “[t]he mere fact that the two gears function together does not show that the two gears are not axially attached.” (Official Action, pg. 4). The Official Action also alleges that “Shinichi figure 4 shows a distinct separation, illustrating that the gears are axially attached.” (Official Action, pg. 4). A careful examination of figure 4 of Shinichi fails to reveal any axial separation between gears 12 and 13. Gear 13 is illustrated by the oblique lines around the periphery of the gear, and as such, a fair and proper reading of Shinichi and review of figure 4 and the other figures fails to indicate any separation between gears 12, 13. Figure 4 is reproduced in the interest of convenience.

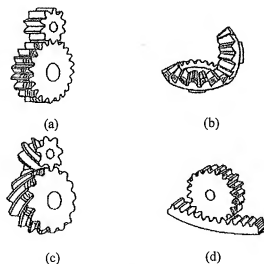


Figure 4

**CLAIM 1**

Claim 1 recites a gear arrangement operably arranged with a rotatable shaft. The gear arrangement includes:



“a first gear made of a first material and a second gear made of a second material different than the first material, wherein the first and second gears are disposed co-axially adjacent one another on the shaft, wherein the elasticity of the first gear is greater than that of the second gear, wherein the strength of the second gear is greater than that of the first gear, and wherein the first gear and the second gear are arranged on the shaft axially detached from each other such that the first and second gears rotate in the same direction relative to the shaft and independently of each other.” (emphasis added, cl. 1).

Shinichi is incapable of anticipating claim 1. Specifically, upon a fair and proper reading, Shinichi fails to disclose the claimed feature of “*wherein the first gear and the second gear are arranged on the shaft axially detached from each other*”. (cl. 1, emphasis added). This feature recites structure and not function. In contrast, in Shinichi the gears are illustrated in FIGs. 4a-4d as integral units. The English translation of Shinichi explicitly discloses that gears 12, 13 are prepared “*as an integral unit*” (See the “Constitution” paragraph of the Abstract; emphasis added). Shinichi also discloses that the gears 12, 13 are combined “*so as to integrally use the gears as one gear*.” (See the “Purpose” paragraph of the Abstract; emphasis added). Further, Shinichi discloses that “*gear (13) made of an elastic material with a larger tooth thickness than that of gear (12) is integrated with said gear (12) to form a gear*.” (See page 2 of the full translation of Shinichi, the “Application examples” section, first paragraph). Thus, Shinichi explicitly states that the two gears 12, 13 are integrated to form a single gear. As a result, Shinichi does not teach or suggest that the two gears 12, 13 are arranged on the shaft axially detached from each other, as in the present claimed invention.

#### **Response to Arguments in the Official Action dated September 25, 2007**

The applicant shall now respond to the individual points of argument presented in the Official Action dated September 27, 2007, in the order which they are presented in the Official Action.

- *“In response, the fact that the two admitted gears (12 and 13) are ‘integrally [used] as one gear’ does not prove that the gears are not ‘axially detached’ as claimed. Webster’s II New Riverside Dictionary defines detached as: separate.”* (Official Action, pg. 4). However, this argument fails because something cannot be “integral” and “separate” or “detached” at the same time. The Merriam-Webster Online Dictionary defines “integral” as “formed as a unit with another part” or “composed of integral parts”. That same dictionary defines “separate” as “set or kept apart: detached”. Thus, the two gears 12, 13 cannot be “formed as a unit” (i.e., single gear as taught by Shinichi) and also be “set apart” or “detached” at the same time – they are the opposite physical structural conditions. In addition, the additional language in Shinichi noted above that “the gears are combined” and that the gears “are prepared as an integral unit” further strengthens the argument that the language where the gears “are integrally used as one gear” proves that the gears are indeed detached from each other.
- *“Clearly the two admitted gears are separate as they are given separate reference characters and discussed separately.”* (Official Action, pg. 4). However, assigning the gears 12, 13 separate reference characters and discussing them separately does not lead to the conclusion that the two gears 12, 13 must be physically detached from each other. Assigning separate reference numbers to the gears 12, 13 and discussing them separately only serves to assist one reading the patent in better understanding the characteristics of each gear 12, 13. The presence of other language in Shinichi noted above controls the physical relationship of the gears 12, 13; that is, where Shinichi explicitly discloses that the gears 12, 13 are prepared “as an integral unit”; where Shinichi discloses that the gears 12, 13 are combined “so as to integrally use the gears as one gear”; and where Shinichi

discloses that “gear (13) made of an elastic material with a larger tooth thickness than that of gear (12) is integrated with said gear (12) to form a gear.” (See page of the full English translation of Shinichi, the “Application examples” section, first paragraph).

- *“Furthermore, the gears function separately as recited in the constitution: ‘When the gears 11, 12 are meshed, the gear 13 engages with the gear 11 always earlier before the gear 12 engages with the gear 11 by a distance of the larger thickness and rotates always in close contact’. The mere fact that the two gears function together does not show that the two gears are not axially detached.”* (Official Action, pg. 4). However, the cited portion of Shinichi above discloses the function of the gears 11, 12, 13 and not the structure of these gears. This functional language is at best inconclusive as to the structure and certainly does not prove that the two gears 12, 13 are not axially detached from each other. Again, Shinichi contains other language noted above that clearly disclose the structural relationship that gears 12, 13 are a single gear.
- *“Furthermore, Shinichi’s figure 4 shows a distinct separation, illustrating that the gears are axially detached.”* (Official Action, pg. 4). However, a close inspection of FIG. 4 of Shinichi, in particular FIGs. 4a, 4c and 4d, fails to reveal the “distinct separation” (or any separation between the gears 12, 13 for that matter) as alleged in the Official Action. The text of Shinichi discloses the opposite: *“together with each conventional gear having rigidity, a gear made of an elastic material is set side-by-side.”* (See pages 1-2 of the full translation of Shinichi, the “Industrial application field” section, first paragraph). Also, *“since gear (13) has a larger tooth thickness, as gears (11), (12) are engaged, it comes in close contact and rotates before gear (12) is engaged with gear (11).”* (See pages 2-3 of the full translation of Shinichi, the “Application examples” section, first paragraph).

Thus, the text of Shinichi explicitly negates any argument that there exists a “distinct separation” between the gears 12, 13.

- *“Furthermore, applicant’s figures 1-3 show gears immediately adjacent, just as Shinichi’s figure 4 shows the two admitted gears immediately adjacent.”* (Official Action, pgs. 4-5). However, the fact that both the present application and Shinichi discloses that the respective gears are “immediately adjacent” does not necessarily mean that the gears of both documents must be the same – that is, detached from each other. As noted above, Shinichi explicitly discloses that the gears 12, 13 are formed as one gear. In contrast, the present claimed invention recites that the two gears are arranged on the shaft axially detached from each other. These are two very different physical structures.
- *“Furthermore, applicant’s invention functions in the exact same way as described in the abstract: ‘...only the first gear (1), while having the same modulus, comes into engagement with another gear in normal operation. As the load increases, the first gear (1) made of plastic yields in the elastic range so that now the second gear (2) made of metal also comes into engagement in order to accept the forces occurring...’.”* (Official Action, pg. 5). However, this argument fails because it is comparing the function of the gears of the present application and the function of the gears in Shinichi, rather than comparing the structure of the claimed invention to the structure of Shinichi. Just because the function of the present claimed invention is alleged to be similar to that of Shinichi does not necessarily mean that the corresponding structures are identical. Whether the gears are detached from each other or integrated together is irrelevant to the achievement of the specific function of the plastic gear yielding in the presence of sufficient forces.

A 35 U.S.C. §102 rejection requires that a single reference disclose each feature of the claimed invention. Thus, for at least the reasons set forth above, Shinichi is incapable of anticipating claim 1.

#### **CLAIM 11**

Since claim 11 currently stands rejected for the same reasons as claim 1, the arguments above with respect to the patentability of claim 1 are applicable to the patentability of claim 11. As a result, it is respectfully submitted that the anticipation rejection of claim 11 is moot and should be removed, and that claim 11 is in condition for allowance and should be passed to issuance.

#### **CLAIM 18**

Since claim 18 currently stands rejected for the same reasons as claim 1, the arguments above with respect to the patentability of claim 1 are applicable to the patentability of claim 18. As a result, it is respectfully submitted that the anticipation rejection of claim 18 is moot and should be removed, and that claim 18 is in condition for allowance and should be passed to issuance.

**CONCLUSION**

For all the foregoing reasons, we submit that the rejection of claims 1, 11-14, 18 and 19 is erroneous and reversal thereof is respectfully requested.

If there are any additional fees due in connection with the filing of this appeal brief, please charge them to our Deposit Account 50-3381. If a fee is required for any extension of time under 37 C.F.R. §1.136 not accounted for above, such an extension is requested and the fee should be charged to the above Deposit Account.

Respectfully submitted,

A handwritten signature in cursive script, appearing to read "Patrick J. O'Shea", is written over a horizontal line.

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## CLAIMS APPENDIX

1. (Previously Presented) A gear arrangement operably arranged with a rotatable shaft, comprising a first gear made of a first material and a second gear made of a second material different than the first material, wherein the first and second gears are disposed co-axially adjacent one another on the shaft, wherein the elasticity of the first gear is greater than that of the second gear, wherein the strength of the second gear is greater than that of the first gear, and wherein the first gear and the second gear are arranged on the shaft axially detached from each other such that the first and second gears rotate in the same direction relative to the shaft and independently of each other.

11. (Previously Presented) A transmission gear assembly operably arranged with a rotatable shaft, that engages a cooperating gear, the transmission gear assembly comprising:

a first gear having a plurality of first gear teeth located along the radial periphery of the first gear; and

a second gear having a plurality of second gear teeth located along the radial periphery of the second gear;

wherein the first and second gears are operably positioned co-axially on the shaft and axially detached from each other to allow independent rotation of the first and second gears in the same direction with respect to each other, wherein the first gear is constructed from a first material and the second gear is constructed from a second material different than the first material, and wherein the first gear has a greater elasticity than that of the second gear, wherein the first gear is engaged with the cooperating gear and the second gear is disengaged from the

cooperating gear when an amount of load applied to the first gear does not exceed an amount that overloads the first gear.

12. (Previously Presented) The transmission gear assembly of claim 11, wherein the first gear teeth and the second gear teeth are helically arranged adjacent to one another.

13. (Previously Presented) The transmission gear assembly of claim 11, wherein the first gear teeth and the second gear teeth are helically arranged offset to one another.

14. (Previously Presented) The transmission gear assembly of claim 11, wherein the first material comprises plastic and the second material comprises metal.

18. (Previously Presented) A transmission gear assembly operably arranged with a rotatable shaft that engages a cooperating gear, the transmission gear assembly comprising:

a first gear having a plurality of first gear teeth located along the radial periphery of the first gear; and

a second gear having a plurality of second gear teeth located along the radial periphery of the second gear;

wherein the first and second gears are operably positioned co-axially on the shaft and axially detached from each other to allow independent rotation of the first and second gears in the same direction with respect to each other, wherein the first gear is constructed from a first



material and the second gear is constructed from a second material different than the first material, wherein the first gear has a greater elasticity than that of the second gear, wherein the first gear engages the cooperating gear and the second gear is not engaged with the cooperating gear when an amount of load applied to the first gear does not overload the first gear, and wherein both the first and second gears engage the cooperating gear when an amount of load applied to the first gear overloads the first gear.

19. (Previously Presented) The transmission gear assembly of claim 18, wherein the first gear is plastic and the second gear is metallic.

**EVIDENCE APPENDIX**

None

**RELATED PROCEEDINGS APPENDIX**

None